REMARKS

Applicants' attorney appreciates the careful attention given the present application. The following remarks, in addition to the amendments are believed to be fully responsive to the Office Action and are believed to render the claims at issue patentable.

The Applicants have cancelled claims 74-77. Claims 1-24, and 78-82 and new claims 102-105 remain pending in the present application.

Restriction Requirement

The Applicants have elected to pursue claims 1-24, and 78-82 in the present application. Applicants had provisionally elected these claims (Invention Group I) for prosecution. Affirmation of this election is by manner of this Response to the Office Action. Claims 25-73 and claims 83-101 are hereby expressly withdrawn from further consideration. Additionally, the Applicants have cancelled claims 74-77. Applicants expressly reserve the right to present the subject matter of claims 25-73, claims 74-77 and claims 83-101, other species, or other claims, in this or a later filed divisional, continuation, or continuation-in-part applications. The Examiner has noted that the species election requirement is withdrawn. Thus, claims 1-24, and 78-82 and new claims 102-105 remain pending in the present application.

Drawing Objections

The Examiner has objected to Figure 18 and 19 because they were originally submitted in color. Applicants respectfully submit new Figures 18 and 19 which are black and white copies of the original Figures 18 and 19.

Claim Objections

The Examiner has objected to claims 2, 14, 21, 74, 78 and 81 because of a number of informalities. The Applicants have provided appropriate amendments to claims 2, 14, 21, 74, 78 and 81 addressing each of these objections.

New Claims

The Applicants have presented new claims 102-105. Support for these claims may be found in original claim 44 and on the discussion spanning page 16, line 12 through page 17, line

17. The claims are directed to compositions and composites containing ferrite particles which have zinc substituted for the divalent ions in specific ferrite compositions.

Claim Amendments

All three independent claims, claims 1, 17 and 78 of the present invention have been amended to include the limitation "wherein the Curie temperature is substantially similar to a processing temperature of the matrix material." Support for this amendment is found on page 36, line 16, Example 7. As such, the present amendments do not present new matter.

Additionally, claims 1, 17 and 78 have been amended to include the limitation "electrically non-conductive" to describe the ferrite particles of the presently claimed invention. Support for this amendment stems from the definition of ferrite materials of the formulae of the present invention. Ferrites are generally described as "highly resistive materials" and are not considered to be "electrically conductive".

A suitable and generally accepted definition for ferrites is "any of a group of nonmetallic, ceramic like, usually ferromagnetic compounds of ferric oxide with other oxides, especially such a compound characterized by extremely high electrical resistivity."

Claim 19 was amended to recite "copper" as suitable for the ion "Me_b". Support for this amendment may be found on page 4, line 34 and page 6, line 10-12 of the Specification wherein suitable soft ferrite particles are described. The Applicants define Me_bO as a "transition metal oxide" on page 4 and on page 6. It is known that copper is a "transition metal" and copper oxide is a "transition metal oxide". Therefore, copper easily meets the definition of "Me_b" as supplied by the Specification.

Double Patenting

Claims 1-4, 6-8, 13, 74-80 and 82 were rejected by the Examiner under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 6 and 9 of U.S. Patent No. 6,056,844 (the '844 patent).

As suggested by the Examiner, the Applicants have filed a terminal disclaimer under 37 C.F.R. 1.321(c). This terminal disclaimer is being filed currently to alleviate the nonstatutory

double patenting rejection. Thus, the Applicants request that the double patenting rejection be removed.

Rejection under Hibst or Monovoukas

Claims 74-77 were rejected by the Examiner under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,469,669 to Hibst or by U.S. Patent No. 5,378,879 to Monovoukas. The Applicants have cancelled claims 74-77. Applicants respectfully request that this rejection thus be removed.

Rejection under Childress

Claims 1-4, 6-8, 10, 74-79 and 92 were rejected by the Examiner under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,668,176 to Childress (the '176 Patent). Additionally, Claims 8, 11 and 12 were rejected by the Examiner under 35 U.S.C. § 103(a) as being unpatentable over the '176 Patent. The '176 Patent purportedly teaches a composite comprising a matrix having magnetic particles embedded therein, wherein the magnetic particles can be strontium ferrite.

It is maintained that the '176 Patent does not teach each and every limitation of the presently claimed invention. Nor does a reading of the '176 Patent render the presently claimed invention obvious.

The '176 Patent describes a method of forming shaped objects from flowable curable liquid resin materials. The '176 Patent does not use "a composition for controlled induction heating" as recited in current claim 1. The '176 Patent teaches that liquid resins and plastisols may be made to assume and hold desired shapes by employing a "filler material." The filler material be may a magnetic material.

All three independent claims, claims 1, 17 and 78 of the present invention have been amended to include the limitation "wherein the Curie temperature is substantially similar to a processing temperature of the matrix material."

The method of the '176 Patent does not involve any induction heating. It relies on the simple orientation of magnetic particles to give some dimensional stability to a putty (an epoxy)

before it is cured. Therefore, the '176 Patent does not disclose, teach or suggest "a composition for controlled temperature induction heating" or a "a composite comprising a matrix and a susceptor for heating the matrix to a desired Curie temperature" as recited in present claims 1 and 78. No where is the concept of Curie temperature control in induction heating described. The '176 patent is silent as toward the careful selection of ferromagnetic hexagonal ferrite particles and a matrix material in controlled induction heating. The Applicants thus respectfully request that the present rejection be removed.

Rejection under Harrison

Claims 1-4, 6-8, 13, 74-80 and 82 were rejected by the Examiner under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,693,775 to Harrison et al. (the '775 Patent). The '775 Patent purportedly teaches the presently claimed invention of a composition and composite comprising magnetic particles embedding in a thermoplastic matrix.

The '775 Patent describes an improved magnetic sealant wherein magnetizable particles are incorporated into a resin in order to position the adhesive. There is no mention in the entire patent regarding Curie temperature or temperature control. Nor is there teaching as to the selection of the ferrite particles such that their Curie temperature matches the processing temperature of the polymer. The '775 Patent teaches that Fe_3O_4 is useful for alignment because of its magnetic properties. Using ferrite materials with specific Curie temperatures selected to match the polymer processing temperature of the presently claimed invention is no where disclosed, described or suggested in the '775 Patent.

Therefore, the '775 Patent does not teach or suggest each and every element of the presently claimed invention. The Applicants thus respectfully request reconsideration of the present rejection.

Rejection under Horiishi

Claims 1, 6, 9, 13-14, 16 and 74 were rejected by the Examiner under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,123,989 to Horiishi (the '989 Patent). The '989 Patent purportedly teaches the presently claimed invention of a composition and composite comprising barium ferrite particles embedded in a thermoplastic matrix.

It is maintained that the '989 Patent does not disclose each and every limitation as presently claimed. No where in the '989 Patent is there teaching directed toward "controlled induction heating" by the selection of susceptor particles with a "specific Curie temperature [that] is substantially similar to a processing temperature of the matrix material".

By contrast the '989 Patent teaches a heating medium on page 8 as a mixture of polypropylene and maghemite (iron oxide) particles. Although some ferrite compositions are disclosed such as barium ferrite, there is no description of the Curie temperature of the susceptor particles being substantially similar to the processing temperature of the matrix material. In fact, there is no disclosure in the '989 Patent of susceptor Curie temperatures, nor is there disclosure on how to control the induction heating based on susceptor selection.

Therefore, the '989 Patent does not disclose each and every embodiment of the presently claimed invention. Applicants respectfully request reconsideration of the current rejection.

Rejection under Kodokian

Claims 17-21, 23 and 74-82 were rejected by the Examiner under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,248,864 to Kodokian (the '864 Patent). Additionally, claims 17-19, 22, 24, 74-79 and 82 were rejected by the Examiner under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,248,864 to Kodokian. The '864 Patent purportedly teaches a composition and composite comprising magnetic particles embedded in a thermoplastic matrix.

The Applicants maintain that the '864 Patent does not teach each and every limitation of the claimed invention. The '864 Patent teaches a method for heating a composite such as a thermoplastic resin reinforced with electrically conductive materials such as carbon fibers, by associating with the composite structure with a heating materials having a high magnetic permeability. The heating material is heated by induction heating, but neither the resin nor the carbon fibers are substantially heated by the magnetic lines. See Column 2, lines 4-6. The heating material may be particles, a metal screen or a foil. The heating material is preferably electrically conductive as evidenced by Claim 1, which describes an "electrically conductive heating material." The carbon fibers act as a structural reinforcement and are also electrically conductive. See Column 2, line 47.

Therefore a reference that teaches that an electrically conductive heating material associated with a composite structure such as a thermoplastic resin reinforced with electrically conductive materials such as carbon fibers, does not teach the presently claimed composition for controlled temperature induction heating comprising ferromagnetic electrically non-conductive hexagonal ferrite particles. It is no where mentioned, suggested or described in the '864 Patent that ferromagnetic electrically non-conductive hexagonal ferrite particles in a matrix material may be used in controlled induction heating applications. In fact, the Applicants maintain that the '864 Patent teaches away from the use of the presently claimed "electrically non-conductive ferrite particles".

Additionally, the Applicants maintain that the '864 Patent is silent as to another feature of the presently claimed invention. The '864 Patent does not teach or suggest compositions wherein the electrically non-conductive ferrite particles are selected such that "the Curie temperature [of the particles] is substantially similar to a processing temperature of the matrix material." In fact, the Applicants maintain that Examples in the '864 teach away from the presently claimed invention.

In Example II, the '864 Patent teaches the use of magnetic particles in PEKK. This Example uses "magnetic oxide" or Fe_3O_4, which has a Curie temperature of 580°C. This temperature is well above "the processing temperature" of PEKK. The recommended service temperature of PEKK is 274°C and the melting temperature of PEKK is 343°C. Therefore, the use of magnetic oxide in PEKK would result in processing complications such as decomposition of the polymer. Using particles with a high Curie temperature in polymers with lower processing temperatures may be problematic in that sections of non-planar bondlines may overheat and decompose the polymer while other sections of the bondline are curing. By contrast, the present application teaches controlled induction heating wherein the Curie temperature of the particles is substantially similar to the processing temperature of the matrix material. By keeping the Curie temperature near the process or service temperature, decomposition of the matrix material is avoided.

The disclosure of the '864 Patent is silent as to limitations that are present in the current independent claims. Therefore, the '864 Patent does not disclose each and every embodiment of the presently claimed invention. Applicants request reconsideration of the current rejection.

Rejection under Tenzer

Claims 1-7, 15, 17-18, 22, 74-79 and 82 were rejected by the Examiner under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,523,549 to Tenzer (the '549 Patent). The '549 Patent purportedly teaches the presently claimed invention of a composition and composite comprising magnetic particles embedded in a silicone matrix.

The '549 Patent claims a compositions that contains two different ferrites, magnesium manganese zinc ferrite and lithium ferrite, which can be blended together to achieve the desired Curie Temperature. The '549 Patent teaches a browning plate to be used in a microwave oven. The browning plate contains a dish with the two ferrite mixture in close proximity.

It is maintained that the '549 Patent does not contain each and every element of the claimed invention. The '549 Patent is silent as to susceptor particles with a "specific Curie temperature [that] is substantially similar to a processing temperature of the matrix material". Additionally, the '549 Patent does not teach or suggest the limitation of "electrically non-conductive ferrite particles". A reference that discloses controlling the Curie temperature by specific ratios of two ferrite materials does not teach or suggest the use of a single susceptor material wherein the "specific Curie temperature substantially matches a processing temperature of the matrix material".

As stated in the '549 Patent, the Curie temperature for magnesium manganese zinc ferrite is 115°C and the Curie temperature of lithium ferrite is 670°C. The use of two ferrite materials with different Curie temperatures in a matrix may present processing difficulties. With a polymer matrix present, on a microscopic level, polymer molecules near the higher temperature ferrite particles will decompose as the particle heats up to its Curie temperature. By contrast, the present invention uses ferrite particles with a Curie temperature that is substantially the same as the processing temperature of the matrix material. Through matching the ferrite particle Curie temperature with the polymer processing temperature, decomposition of the polymer material is eliminated.

The disclosure of the '549 Patent is silent as to limitations that are present in the current independent claims. Therefore, the '549 Patent does not disclose each and every embodiment of the presently claimed invention. Applicants respectfully request reconsideration of the current rejection.

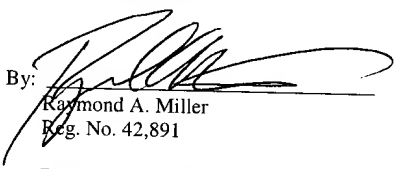
CONCLUSION

In light of the foregoing amendments and arguments, Applicants respectfully submit that the elected claims are in condition for allowance. Applicants respectfully request reconsideration and a timely notice of Allowance on the pending claims 1-24 and 78-82.

The Applicants believe that no fee is necessary in the present communication. In the event that a fee is required for this response, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 50-0436.

Should the Examiner have any questions or comments, or need any additional information from Applicants' attorney, he is invited to contact the undersigned at his convenience.

Respectfully submitted,

By: 

Raymond A. Miller
Reg. No. 42,891

Dated: June 1, 2004
PEPPER HAMILTON LLP
500 Grant Street
One Mellon Bank Center, 50th Floor
Pittsburgh, PA 15219
(412) 454-5813
(412) 281-0717 - facsimile